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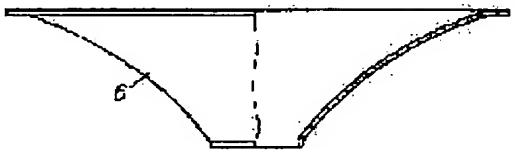
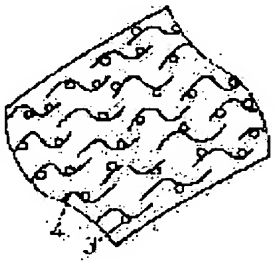
(54) DIAPHRAGM FOR SPEAKER AND ITS MANUFACTURE

(57)Abstract:
PURPOSE: To obtain a diaphragm for speaker in which a problem such as the increase of the weight of a diaphragm due to the attainment of waterproof for a paper pulp diaphragm or requirement for two manufacturing processes can be solved and superior performance can be obtained in the diaphragm for speaker used in every kind of acoustic equipment.
CONSTITUTION: Waterproof performance can be effectively obtained without increasing the weight of the diaphragm 6 and the manufacturing process of the diaphragm 6 by fixing synthetic resin 3 provided with fluorine radical at its terminal on paper pulp 4 at the stage of raw material before the making the paper pulp diaphragm, and performing the molding of the raw material.





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[Date of extinction of right]

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The diaphragm for loudspeakers which comes to carry out paper making of the paper pulp to which the synthetic resin which has a fluorine radical in an end was fixed.
[Claim 2] The manufacture approach of the diaphragm for loudspeakers which carries out paper-making shaping after fixing the synthetic resin which supplies the emulsion of the synthetic resin which has a fluorine radical in an end to the suspension of paper pulp, and has a fluorine radical in an end by the aluminum sulfate.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the diaphragm for loudspeakers used for various audio equipments, and its manufacture approach.
[0002]
[Description of the Prior Art] It was constituted as conventionally shown in drawing 3 and drawing 4 as a diaphragm for loudspeakers which consists of waterproof paper pulp used for the door mounting loudspeaker for mount etc. That is, it was the configuration which carry out dipping of the diaphragm 1 which carried out paper making of the paper pulp 2, and fabricated it to the solution of synthetic resin at an after process, and synthetic resin 3 is made to adhere on the surface of paper, and prevents encroachment of water.
[0003]
[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional configuration, when only the synthetic resin 3 which prevents encroachment of water was made to adhere, the diaphragm 1 became heavy, and the technical problem that the sound pressure of a loudspeaker fell occurred.
[0004] Moreover, since the layer of the synthetic resin 3 which prevents encroachment of water did not spread on a front face, when the blemish reached the front face according to the accident of handling etc., the technical problem that waterproofness was lost occurred.
[0005] Furthermore, with the above-mentioned conventional configuration, the production process of a diaphragm 1 turned into two processes, and the technical problem that a manufacturing cost rose also occurred.
[0006] It aims at offering the diaphragm for loudspeakers which this invention can solve the above-mentioned conventional technical problem, and can demonstrate the outstanding water proof engine performance, and its manufacture approach.
[0007]
[Means for Solving the Problem] In order to solve said technical problem, this invention carries out paper-making shaping of the paper pulp to which the synthetic resin which has a fluorine radical in an end was fixed, and constitutes a diaphragm. [0008] Moreover, in order to fix to paper pulp the synthetic resin which has a fluorine radical in an end, the constant-rate charge is carried out and the synthetic resin which has a fluorine radical in the emulsion-ized end fixes the suspension of paper pulp to paper pulp by the aluminum sulfate of a fixing agent.
[0009]
[Function] Since the water proof engine performance as a diaphragm is satisfied by the synthetic resin which has a fluorine radical in an end as mentioned above to have had water repellence and to only be fixed very much to little paper pulp, the weight of a diaphragm does not increase it. Moreover, since the whole paper pulp which constitutes a diaphragm has the water proof engine performance, waterproofness is not lost by the blemish of handling etc.
[0010] Moreover, since the synthetic resin which bundles up in the phase of the pulp of a raw material and has a fluorine radical in an end is fixed, a production process does not turn into two processes and the manufacturing cost of a diaphragm does not rise.

[0011]
[Example] The diaphragm for loudspeakers in one example and its manufacture approach of this invention are explained using a drawing below.
[0012] The half section front view and drawing 2 which show the configuration of the diaphragm for loudspeakers according [drawing 1] to this invention are the expanded sectional view of this important section. the emulsion (Dainippon Ink & Chemicals DIKKU guard F-400) of the acrylic resin which the needle-leaf tree system sheep pan of the diaphragm for loudspeakers of this invention is carried out, it carries out beating of the kraft pulp to Canadian freeness 680cc, and has a fluorine radical in an end after adding a color and a predetermined paper reinforcing agent, and a predetermined sizing compound -- a paper pulp raw material -- receiving -- 3wt(s)% -- it adds and agitates. Next, it adds, agitating an aluminum sulfate (Sumitomo Chemical aluminum sulphate) until PH of pulp liquid is set to 5.0. Paper-making shaping of the obtained pulp liquid is carried out with the paper-making network of a diaphragm configuration, and the diaphragm for loudspeakers of this invention is obtained.
[0013] Drawing 1 , the synthetic resin in which 4 has paper pulp in an end and 5 has a fluorine radical in drawing 2 , and 6 show the diaphragm.
[0014] It was 0.5% when the weight rate of increase of the diaphragm by the existence of a waterproofing agent was measured about the diaphragm for loudspeakers of this invention. This is farther [than the increase of 12% of weight of the approach by dipping of conventional synthetic resin] small.
[0015] Moreover, the leak was not generated when the water proof test which collects water at the tooth back of a diaphragm and is left in the minimum depth of water of 30mm at it about the diaphragm for loudspeakers of this invention for 96 hours was carried out.
[0016] Furthermore, the leak was not generated, although it tore apart between layers in the thickness of abbreviation one half about some diaphragms and the same water proof test was performed about the diaphragm for loudspeakers of this invention.
[0017]
[Effect of the Invention] As mentioned above, without making the weight of a diaphragm increase, since it is constituted, the diaphragm for loudspeakers by this invention can obtain the water proof engine performance effectively, without making the production process of a diaphragm increase, and is a so-called size of industrial value.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The half section front view showing the configuration of the diaphragm for loudspeakers in one example of this invention
[Drawing 2] The expanded sectional view of this important section
[Drawing 3] The half section front view of the conventional diaphragm for loudspeakers
[Drawing 4] The expanded sectional view of this important section
[Description of Notations]
4 Paper Pulp
5 Synthetic Resin Which Has Fluorine Radical in End
6 Diaphragm

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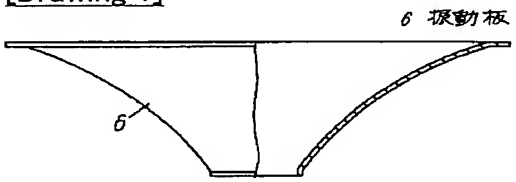
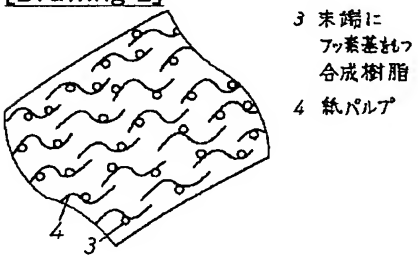
DRAWINGS

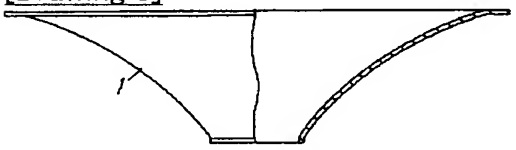
[Drawing 1]



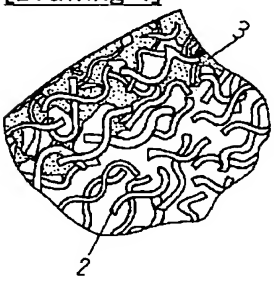
[Drawing 2]



[Drawing 3]



[Drawing 4]



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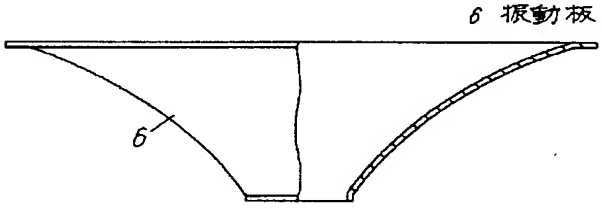
(54)【発明の名称】　スピーカ用振動板およびその製造方法

(57)【要約】
【目的】　各種音響機器に使用されるスピーカ用振動板に関し、紙パルプ振動板の防水化をはかると振動板重量が増し、製造工程が２工程となるという課題を解決し、優れた性能を発揮することができるスピーカ用振動板を提供することを目的とする。
【構成】　紙パルプ振動板の抄紙前の原料の段階で、末端にフッ素基をもつ合成樹脂５を紙パルプ４に定着させ、この原料を抄紙成形することで、振動板６の重量増加なしに、振動板６の製造工程を増加させることなく、効果的な防水性能を得ることができる。



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【特許請求の範囲】

【請求項１】末端にフッ素基をもつ合成樹脂を定着させた紙パルプを抄紙してなるスピーカ用振動板。

【請求項２】末端にフッ素基をもつ合成樹脂のエマルジョンを紙パルプの懸濁液に投入し、末端にフッ素基をもつ合成樹脂を硫酸アルミニウムにより定着させた後抄紙成形するスピーカ用振動板の製造方法。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は各種音響機器に利用されるスピーカ用振動板およびその製造方法に関するものである。

【０００２】

【従来の技術】従来、車載用のドアマウントスピーカ等に用いられる防水の紙パルプよりなるスピーカ用振動板としては図３，図４に示されるように構成されていた。すなわち、紙パルプ２を抄紙して成形した振動板１を後工程で合成樹脂の溶液にディッピングし、紙の表面に合成樹脂３を付着させて水の浸入を防ぐ構成であった。

【０００３】

【発明が解決しようとする課題】しかしながら上記従来の構成では、水の浸入を防ぐだけの合成樹脂３を付着させると振動板１が重くなり、スピーカの音圧が低下するという課題があった。

【０００４】また、水の浸入を防ぐ合成樹脂３の層が表面にしかないために、取扱いの事故等により表面に傷がつくと防水性が失われるという課題があった。

【０００５】さらに、上記従来の構成では振動板１の製造工程が２工程となり製造コストが上昇するという課題もあった。

【０００６】本発明は上記従来の課題を解決し、優れた防水性能を発揮することのできるスピーカ用振動板およびその製造方法を提供することを目的とするものである。

【０００７】

【課題を解決するための手段】前記課題を解決するために本発明は、末端にフッ素基をもつ合成樹脂を定着させた紙パルプを抄紙成形して振動板を構成するものである。

【０００８】また、末端にフッ素基をもつ合成樹脂を紙パルプに定着させるために、エマルジョン化した末端にフッ素基をもつ合成樹脂を紙パルプの懸濁液に一定量投入し、定着剤の硫酸アルミニウムにより紙パルプに定着させるものである。

【０００９】

【作用】以上のように末端にフッ素基をもつ合成樹脂は、撥水性を持ち、ごく少量紙パルプに定着しているだけで振動板としての防水性能を満足させられるので、振動板の重量が増加することもない。また、振動板を構成する紙パルプ全体が防水性能を持つため、取扱いの傷等によっても防水性が失われることはない。

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【００１０】また、原料のパルプの段階で一括して末端にフッ素基をもつ合成樹脂を定着させるので、製造工程が２工程とならず、振動板の製造コストが上昇することもない。

【００１１】

【実施例】以下本発明の一実施例におけるスピーカ用振動板およびその製造方法について図面を用いて説明する。

【００１２】図１は本発明によるスピーカ用振動板の構成を示す半断面正面図、図２は同要部の拡大断面図である。本発明のスピーカ用振動板は、針葉樹系未さらしクラフトパルプをカナディアンフリーネス６８０ccまで叩解し、所定の染料および紙力増強剤とサイズ剤を添加の後、末端にフッ素基をもつアクリル樹脂のエマルジョン（大日本インキ化学工業製ディックガードＦ－４００）を紙パルプ原料に対して３ｗｔ％添加して撹拌する。次に、硫酸アルミニウム（住友化学製硫酸ばんど）をパルプ液のＰＨが５．０になるまで撹拌しながら添加する。得られたパルプ液を振動板形状の抄紙網で抄紙成形して本発明のスピーカ用振動板が得られる。

【００１３】図１，図２において４は紙パルプ、５は末端にフッ素基をもつ合成樹脂、６は振動板を示している。

【００１４】本発明のスピーカ用振動板について、防水剤の有無による振動板の重量増加率を測定すると、０．５％であった。これは従来の合成樹脂のディッピングによる方法の１２％の重量増よりもはるかに小さい。

【００１５】また、本発明のスピーカ用振動板について、振動板の背面に最小水深３０㎜で水を貯めて９６時間放置する防水テストをしたところ、水漏れは発生しなかった。

【００１６】さらに、本発明のスピーカ用振動板について、振動板の一部分について約半分の厚みに層間で切り裂いて同様の防水テストを行ったが水漏れは発生しなかった。

【００１７】

【発明の効果】以上のように本発明によるスピーカ用振動板は構成されるために、振動板の重量を増加させることなく、振動板の製造工程を増加させることなく効果的に防水性能を得ることができ、工業的価値の大なるものである。

【図面の簡単な説明】

【図１】本発明の一実施例におけるスピーカ用振動板の構成を示す半断面正面図

【図２】同要部の拡大断面図

【図３】従来のスピーカ用振動板の半断面正面図

【図４】同要部の拡大断面図

【符号の説明】

４　紙パルプ

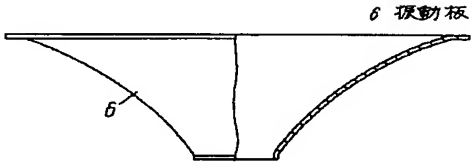
3

5　末端にフッ素基をもつ合成樹脂

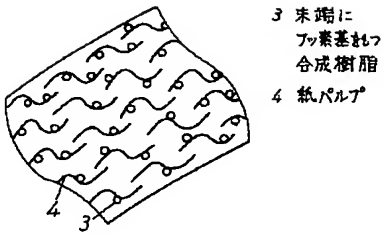
4

＊　＊６　振動板

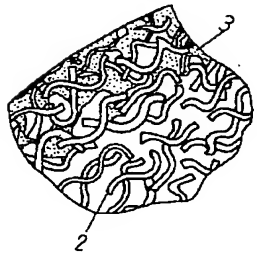
【図１】



【図２】



【図４】



【図３】